SALMON CULTURE.

PROPAGATION OF THE FISH IN CALIFORNIA WATERS.

The Taking and Hatching of Spawn at a United States Government Station—Wonderful Work at a Hatchery.

FAR up in Shasta County, Cal., picturesquely located on the banks of the McCloud River and surrounded by towering hills and mountains, is an important station of the United States Government of which the people of California have but very little knowledge. In that beautiful and picturesque spot has been maintained for many years the pioneer fish hatchery of the State, to which circumstance is due in great measure the almost marvelous plenitude of the quinnat or Pacific salmon in California waters to-day.

A San Francisco Chronicle reporter who visited the station was surprised to note the substantial character of the improvements made by the Government. The main hatchery building is a commodious structure well adapted to the purpose for which it was constructed. Other buildings include stables, engine-house, store and postoffice in addition to the residence of Superintendent Stone, which stands on a sightly eminence overlooking the river. Seymour Bass, foreman of the hatchery, has a comfortable residence nearer the river, while within convenient distance of all the buildings is a well-kept boarding-house, where the white help and visitors to the station take their meals.

The popular idea of a fish hatchery is very vague. So little is the subject understood that many intelligent people can be found who believe that fish eggs, like the eggs of a barnyard fowl, may be hatched under a hen or in an incubator. This article has been written to afford more accurate knowledge on an important and interesting subject, and embraces the results of general observations by a Chronicle reporter of the work at Baird in every department.

The routine of work at Baird is embraced in three separate detachments—fishing, spawning and hatching. By fishing is meant the taking of the ripe parent salmon from the pool in the river below the rack. This is accomplished by the use of a 130-foot seine net with which the pool is repeatedly dragged both morning and evening. The first haul with the net is made at 5.30 a. m. each day during the fishing season, and additional hauls are made at intervals of half an hour so long as the fishing continues good.

To the reader it would appear that fishing in the waters of the McCloud River at 5.30 in the morning would be fraught with much general discomfort. Such, however, is far from being the case. Before the fishing commences a great bonfire is built on the river's edge. This fire serves the double purpose of lighting up the river and of removing in a measure the chill of the early morning.

When the helpers have gathered and warmed themselves at the fire the great net is slowly unwound from the spool where it had been placed to dry after the fishing of the night before and and is stowed in the stern of a boat. Two men silently row out into the stream. One end of the net is dropped on the hatchery side of the stream, the other end on the east side, opposite the hatchery, and then the signal is given to pull in the net. Immediately a strong pull is brought to bear on the two ropes leading from the net to the shore. One end is attached to a hand windlass, the other to a larger windlass turned by horse power. Both windlasses are put in motion at the same time, and gradually the line of cork floats betokening the location of the net commences to move shorewaard. Nearer and nearer comes the net, and then the ensnared salmon commences to struggle for freedom. Here and there a fin cuts the water, there is a wild splashing as a dozen monster salmon spring half their lengths out of the water, and then, as the net draws still closer to the shore, the red bodies of the imprisoned fish may be seen flashing beneath the clear water on which falls but faintly a few gleams of light from the fading fire, which, in the excitement of the moment, has been almost forgotten.

GATHERING THE FISH AFTER A HAUL OF THE SEINE.

PULLING IN A FULL SEINE BY HAND.

A few more hauls on the two shore ropes and the mass of struggling fish is in shallow water, while Foreman Bass is busily counting to see the size of the haul. Not a fish in the lot that weighs less than twenty pounds. A dozen or more weigh forty or fifty pounds. Quickly the Indian helpers get to work sorting out the fish, ripe from unripe, males from females. With marvelous dexterity, acquired only by experience and long practice, the Indians pick up each struggling fish by the tail. Then follows an examination to see if the fish be ripe and ready to spawn. If not ripe, back goes the fish into the stream. The ripe fish meets with a different fate. Still held by the tail it is carried a few yards to the spawning station, which consists of a platform built over the river and a half dozen or more pens built out from the platform into the stream. Into one of these pens go the ripe females, into another the ripe males, to await the spawning process which is to follow later in the day.

Hard work it is sorting out and carrying these fish. The Indians, when they have finished, are bathed in perspiration and feel no need of sitting by the fire during the half hour of rest which is allowed before another haul. Fishing continues until 7 o'clock, when an hour is taken for breakfast. Following the breakfast hour fishing continues with varying success until the pens of the spawning station are well filled with ripe salmon. The average haul at the present time is from thirty to forty fish. Only last week a single haul netted nearly 200 fish, and hauls have been known to run as high as 300 fish, all of large size and aggregating such enormous weight that the shore windlasses groaned and creaked in a most distressing manner as the net was advancing shoreward.

The fishing finished, then follows the more interesting business of the day, and that is to spawn the scores of ripe fish that have been caught. Indians armed with hand nets lift the salmon from the pens and deposit them on the platform, where they are left to thrash and kick about until called upon to yield their accumulated harvest of spawn. The process of taking the eggs requires the united efforts of four men, a large bucket, a feather and two fish, a male and female. The female is held over the bucket by two men, one of whom rubs his hand vigorously upon the breast of the fish. From an opening back of the anal fin immediately gushes a stream of eggs, round in shape, a rich red in color, and each about the size of a large pea. At the same time a third man holds over the pail a male salmon, who is made to discharge his milt, a white substance of about the same consistency as cream. Foreman Bass with a feather stirs the eggs and milt together until they are well united. The spawning of the female means her death. She is immediately thrown out on the bank and left to lie until the close of the day's work, when the fish are all picked up by the Indian women, and after being cleaned hung up in the sun and left to dry for winter food.

The males continue to spawn fo a week or two at a time, and when once used are thrown back in their proper jar to be used again day after day until the season's store of milt is exhausted. When the eggs of the female first come in contact with the milt they unite. While in this condition they are placed in shallow jars and left to stand for an hour or two, at the end of which time the eggs separate and are ready to be washed. The process of washing follows the day's spawning, which generally lasts until nearly noon. The washing of the eggs is accomplished by placing them in large buckets, which are filled with water from the river, with which the eggs are washed over and over again until they are perfectly clean.

The next step is to carry the eggs to the hatchery, which is done by hand. A brief description is necessary to give the reader an idea of what the hatchery is like. It consists simply of a series of long, narrow troughs, through which flows constantly a stream of water, pumped fresh and cold from the river. In these troughs are set baskets of wire netting just wide enough to fit inside of the trough and about eighteen inches in length. These baskets are the receptacles for the freshly washed salmon eggs. Foreman Bass in disposing of the eggs aims to place about 20,000 in each basket. The unit of measure is a tin dipper which holds about 1000.

The baskets being of netting on all sides, offer no obstruction to the continuous flow of water in the troughs. This continued flow of water has the same effect on the eggs as though they had been spawned naturally by the parent fish at the bottom of the river. As the eggs are thus left in the baskets they are looked over from day to day by experienced hands, who pick out the dead eggs which have failed of impregnation. Eggs of this sort generally amount to about two per cent. of the whole. It is sought to get rid of these eggs before the good ones commence to hatch.

The first sign of life in the egg is the appearance of the eyes, which, after the first few days, can be clearly seen with a microscope. The eyes appear plainly on the outside of the egg after eighteen or twenty days. The next manifestation of life is the appearance of the head and tail, which emerge, leaving the body of the fish still incased in a sort of sac, which is gradually absorbed. Even incumbered by this sac the tiny fish display much strength and are soon able to swim against the current in the trough.

The length of time required for the eggs to hatch varies greatly, according to the temperature of the water. The warmer the water the quicker the hatching. One degree's difference in temperature makes a difference in the hatching of five days.

The fishing in the evening is a repetition of that in the morning. The first haul of the net is made by the light of a bonfire at 7.30 o'clock, and fishing is continued until 10 o'clock and even until midnight, when the fish are sufficiently plentiful. The fish taken in the evening are sorted and placed in the pens, but are not spawned until after the morning haul the following day.

Through all the hard work pertaining to the hatchery a visitor is impressed with the enthusiastic interest of the men who do the work. From the superintendent and foreman down to the meanest Indian helper this interest in the work of the hatchery amounts almost to a passion. A day's work with them means all the work that can be done. Every man has an ambition to catch and handle as many fish as possible, and no considerations of personal comfort or discomfort are permitted to interfere with the accomplishment of that purpose.

Fishing at Baird continues until rain and consequent high water in the river render it impossible to maintain the rack across the river. At the first sign of high water the employes are put to work removing the rack and a large water wheel which furnishes the power necessary to pump water from the river into the hatchery. After the removal of this water wheel water is pumped as long as required by steam.

During February and March the employes are kept indoors by the severity of the elements, and have nothing to do but entertain and amuse themselves as best they can. With the arrival of April a start is made toward putting things in readiness for the summer salmon run during August and September. The first work after the water recedes sufficiently is to throw the rack across the river and reconstruct the spawning station and pens, which, when not removed in time, are always swept away by the winter flood, which often causes the water in the river to rise fifteen or twenty feet.

The population of Baird, including men, women and children, numbers in all about twenty souls. The people get along together without trouble of any kind, living almost as one happy family. Superintendent Stone is universally liked and respected by all. The effect of his presence and influence is apparent even among the Indian employes, who have been improved, both in manners and appearance, by their contact with a kind, courteous and educated gentleman. The Indian helpers are skilled in the work of the hatchery, and in the fishing season their services are always in demand.

Cut Off His Own Toe With a Chisel.

David Marshall, of Sharpsburg, had been suffering with a diseased toe. While it was acting pretty badly he made up his mind that sharp measures were in order, so he got a sharp chisel and a heavy hammer and made himself ready for a surgical operation. He put the chisel on the toe, raised the hammer and brought it down with a firm whack and parted with the disagreeable member.—Baltimore Sun.

A Handsome Spring Dress.

This handsome dress is of petunia mauve-embroidered crepon; marabout of frayed mousseline de soie of the shade, with a bordering of fluffy black feathers round the edge of the skirt. It has bertha flounces to sleeves, with vest and ruching of the mousseline de soie. There are small black feather aigrettes fastened at the left side. The sash is of satin ribbon.

Greek Soldiers.

In a letter from Athens, Greece, to the Chicago Herald the writer says: Yesterday Queen Olga, with the members of the royal family, except the King, went to church in state to the Metropolis, the great central church of the national worship in Greece. King George was absent because he is Lutheran, and performs his devotions at a little chapel in the palace. A magnificent and showy event was Her Majesty's church-going. First came a large body of cavalry riding full gallop down the hill leading from the palace. Then several carriages containing members of the royal family, high officers of the Government, etc., and next Her Majesty's state coach, drawn by four spirited horses, at full speed. To anybody who has never seen a Queen's state coach, this one at least would be a curious looking vehicle. In architecture it somewhat resembles the famous carryall of George Washington, of blessed memory, although it is much longer. High on the front seat sat a coachman and footman in

GREEK SOLDIER.

all the flounced and white-skirted splendor of the Greek national costume. This costume, which would attract a crowd of boys on Broadway, Wabash avenue or Kearney street any day, is exactly that of a ballet dancer, tights, skirts and all. Put it on a man, add a pair of red turned up shoes with big pon-pons at the toes, let the tights be somewhat bagged at the knees, as always happens to a man no matter what sort of trousers he wears, and surmount the whole outfit with a cap, and you have the Greek soldier in Albanian costume. It is only necessary to add that the men who wear this outlandish outfit are among the bravest soldiers in the world, as they have shown on many a bloody battlefield.

Natural Enough.

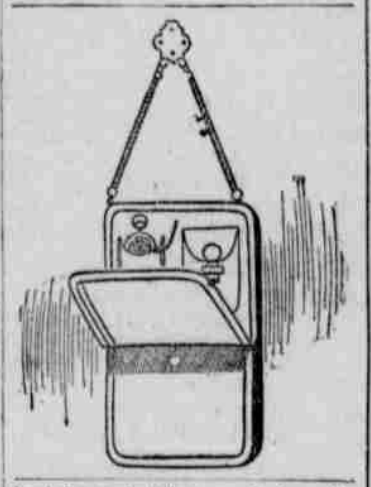
First Fowl—"I'm surprised to see that you're afraid of a dog that's chained."

Second Fowl—"Well, I can't help being chicken-hearted."—Truth.

Flattery always has a string to it.—Galveston News.

A New Safety Pocket.

Pockets are to be counted among the many troubles of womankind, and any alleviation of the difficulties entailed by a desire to carry all that is necessary with safety will be hailed with delight by our sex. There is hardly any



feminine pocket that can be honestly said to be safe for carrying money. Lady Isabella Margesson has, however, come to the rescue of her sex, and has invented one of the most convenient bags which we have yet seen. It is, indeed, multum in parvo. It is intended to hang at the side, and is divided in half, one portion being devoted to the watch and a small bag for gold, the other to the purse; while the pocket for cards and pencils is at the back. But by a clever contrivance the purse cannot be reached from the outside. By means of a spring, the mouth of the bag opens wide, and on unclasping the upper pocket first the purse is available. The bag is of a very moderate size, made in different kinds of leather, being ornamental as well as useful.—London Queen.

Funny Ducks' Nests.

The water-fringed village of Grouw, in Friesland, North Holland, is remarkable for two things—cheeses and ducks. The lakes which fringe the village on three sides are thick with bulrushes and water-grass, and afford

excellent cover for wild ducks and other aquatic fowl. To promote the comfort of the former and at the same time make the collection of their eggs easier, the villagers construct nests of the form shown in the illustration. The nests are made of plaited rushes, and are hung on poles driven into the soil, or perched between the forks of trees. Above each group the owner of the nests fixes pieces of colored cloth which enable him to readily tell his nests from those of his neighbors. These bits of bunting are useful also to the birds, who keep to their own nests. The owner goes each morning in his boat to the nesting ground, thrusts his arm into the bottle-shaped nests and collects their contents for the market.

The ex-President of a defunct Kansas City bank is said to be peddling clothes-wringers for a living.

W. T. Parnell, of Scotland Neck, N. C., is cultivating land granted to his progenitors by King George.

First Female Law

Mrs. Myra Bradwell, [illegible] James B. Bradwell, and [illegible] and managing editor of [illegible] Legal News, died recently [illegible] She was born in March [illegible] 1831. When twelve years [illegible] came West with her parents [illegible] educated at Kenosha, W[illegible]

MYRA BRADWELL.

1852 married James B. [illegible] rising young lawyer. Be[illegible] terested in his profession [illegible] menced the study of law [illegible] supervision. She passed a [illegible] ble examination, but because [illegible] married woman was denied [illegible] to the bar. She did not [illegible] bent all her energies in re[illegible] legal defeat.

Her application was refused [illegible] Supreme Court of Illinois, [illegible] sued out a writ of error a[illegible] State of Illinois in the Supre[illegible] of the United States. Her [illegible] argued in 1871 by Matt [illegible] United States Senator from W[illegible] The Court, upon considera[illegible] fied Mrs. Bradwell that her [illegible] was a legal disability, which [illegible] lation could remove.

Another effort was made [illegible] Supreme Court consider it [illegible] favorably, but an adverse de[illegible] rendered at the time. Two [illegible] later the Court apparently [illegible] sidered its ruling and order[illegible] tificate issued.

Mrs. Bradwell was the first [illegible] in the United States to apply [illegible] mission to the bar, the first w[illegible] became a member of the Illi[illegible] Association and the first w[illegible] become a member of the Illi[illegible] Bar Association. Over tw[illegible] years ago Mrs. Bradwell es[illegible] the Chicago Legal News, [illegible] weekly legal paper ever pu[illegible] the Western States, and was [illegible] and its business manager u[illegible] death. The Legislature gra[illegible] special charter for her p[illegible] passed several acts making it [illegible] in courts and a valid medium [illegible] publication of legal notices.

Hunting With Projec[illegible]

It has often been repeated t[illegible] is the only creature sufficiently [illegible] ligent to utilize as weapons [illegible] objects like a stone or a stic[illegible] much greater degree, therefo[illegible] said, was he the only creature [illegible] of striking from afar with a p[illegible] Nevertheless, creatures so [illegible] fish exhibit extreme skill in [illegible] reaching their prey at a [illegible] Several act in this way. The[illegible] the Toxotes jaculator, which [illegible] the rivers of India. His prince[illegible] is formed by the insects who [illegible] over the leaves of aquatic pl[illegible] wait until they fell into th[illegible] would naturally result in bo[illegible] fare. To leap at them with o[illegible] is difficult, not to mention t[illegible] noise would cause them to fl[illegible] Toxotes knows a better tr[illegible] that. He draws in some [illegible] water, and, contracting his [illegible] projects them with so much f[illegible] certainty that they rarely fail [illegible] the chosen aim, and to bring [illegible] water all the insects he desire[illegible]

TOXOTES THROWING WATER AT [illegible]

Other animals also squirt [illegible] liquids, sometimes in attack, [illegible] especisily in defense. The [illegible] lopods, for example, omit the [illegible] which darkens the water and [illegible] them to flee. Certain insects [illegible] bitter or fetid liquids; but in a [illegible] cases, and in others that are [illegible] the animal finds in his own or [illegible] a secretion which happens to be [illegible] or less useful to his conservation. [illegible] method of the Toxotes is differ[illegible] is a foreign body which it [illegible] and it is an intended victim [illegible] it takes aim and which he strike[illegible] movements are admirably co-[illegible] to a precise effect.—Popular [illegible] Monthly.

The man who "itches for [illegible] usually kept scratching.—[illegible]